



Kay Halloran  
Kay Halloran – Mayor

## LEARNING FROM THE FLOOD, INVESTING IN OUR FUTURE.

The value and strength of a community truly come into focus during a natural disaster. Nowhere was that more evident than in Cedar Rapids' response to last June's epic flood.

There are countless tales of overwhelming damage and loss, yet there are as many extraordinary examples of hard work, dedication and cooperation on a huge scale.

The Cedar Rapids Water Department experienced firsthand that remarkable determination as we worked to minimize the flood's impact, particularly its threat to our community's water supply.

We take seriously our obligations as stewards of the city's water supply. We continually measure, monitor and protect our water resources, and ensure that our system is able to provide the excellent water we depend on.

Those duties became an even greater priority with the flood. We managed to avoid disastrous damage and complete shut-down of operations during the flood largely because of the tremendous outpouring of help from residents and employees to protect our water supply.

We lost 49 of our 50 wells as the flood waters rose. Ranney Well #3 was the last functional well but we nearly lost it. Our staff sandbagged and pumped all day. Linn County crews also helped by providing sand once Cedar Rapids' supplies were exhausted. When we asked the public for help late that night of June 12, nearly 1,000 citizens responded. They stood side-by-side in five lines nearly 300 feet long, passing sandbags to build a wall around Well #3. We all worked until nearly midnight, when our efforts succeeded.

The Coast Guard and National Guard took city crews up river to survey damage and get to wells to repair them. The cities of Hiawatha and Marion provided parts of Cedar Rapids with water from their fire hydrants to ours. Cedar Rapids never lost water because of all this aid, plus extreme conservation by residents and businesses.

The experience brought home just how critical our water supply is to our health and welfare. Today, lessons from the flood have led us to upgrade emergency contingency plans. Before last June, the highest flood crest we'd experienced in Cedar Rapids was 19.3 feet in 1993. This time, we lacked the ability to respond to the rapid influx of water and unforeseen, 31-foot crest.

This spring, reconstruction has begun on 10 existing vertical wells in the Seminole Valley Park, elevating them three feet above the 2008 flood crest level.

We have also progressed in upgrading our water treatment facilities. This will reap benefits in terms of safety and effective operations. Investing in better treatment methods, distribution upgrades, new facilities and new technologies ensures that our system and the water we provide are the best available.

Improvements are about to go online at both our water treatment plants, with the addition of treated water storage space and the state's first ultraviolet (UV) disinfection system for a city water utility. UV technology has been shown effective in fighting virus contamination of source water. This addition is in anticipation of new, more stringent federal regulatory standards.

Our City Council members and staff welcome the chance to share this information and communicate openly. We hope this report, required each year by the Environmental Protection Agency, is helpful in keeping you informed of the city's resource management and pledge to sustain an abundant, high-quality water supply. Our entire City Council supports all efforts to make your water service the best possible.



### City Council

Brian Fagan  
At Large

Tom Podzimek  
At Large

Pat Shey  
At Large

Kris Gulick  
District 1

Monica Vernon  
District 2

Jerry McGrane  
District 3

Chuck Wieneke  
District 4

Justin Shields  
District 5

### UV DISINFECTION & PLANT REMODELING PROJECT TIMELINE UPDATE



Cedar Rapids Water Department  
1111 Shaver Road NE, Cedar Rapids, Iowa 52402 319-286-5910



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### GLOSSARY

#### Action level (AL)

The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

#### Arsenic

The EPA recently lowered the arsenic MCL to 10 ppb. Trace amounts of arsenic are occasionally detected in your drinking water at levels well below this more stringent standard. Arsenic is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

#### Coliform

A bacteria originating in the digestive system of mammals. Its presence in water alerts lab technicians that disease-causing agents may be present.

#### Compliance

Following all rules and regulations defined in the Safe Drinking Water Act and maintaining water quality below Maximum Contaminant Levels (MCLs).

#### Contaminant

One of a variety of natural or man-made physical, chemical, biological or radiological substances whose presence in public water systems may cause adverse health effects to consumers.

This is a recycled paper containing at least 10% post-consumer waste.

#### Detection

The positive identification of the presence of a particular contaminant. Detection of a contaminant does not necessarily represent a serious health risk to consumers if the concentration is below the MCL.

#### Disinfection

Killing the larger portion of microorganisms in water, with the probability that the disinfecting agent kills all disease-causing bacteria.

#### Filtration

A treatment process that physically removes particles from water as the water passes through a medium.

#### Ground water

The supply of fresh water found beneath the earth's surface, usually in aquifers. Ground water is often used to supply wells and springs.

#### Herbicide

A chemical agent used to kill plants, especially weeds. Used widely in agriculture.

#### Immuno-compromised

A physical condition in which the human immune system becomes less capable of warding off illness or infection.

#### Inorganic

Composed of or involving organisms (or their remains or products) that are not living. Examples of inorganic substances include minerals, rocks and salt.

#### Maximum Contaminant Level (MCL)

The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible, using the best available treatment technology.

#### Maximum Contaminant Level Goal (MCLG)

The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

#### Maximum Residual Disinfection Level (MRDL)

The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of disinfectant is necessary for control of microbial contaminants.

#### Maximum Residual Disinfection Level Goal (MRDLG)

The level of drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

#### Microbial

A group of microorganisms such as bacteria, protozoa and viruses.

#### Nephelometric Turbidity Unit (NTU)

A unit of measure used to determine the clarity of drinking water.

#### Organic

Of, pertaining to, or derived from living organisms. Organic matter contains carbon, hydrogen and oxygen. Examples include humans, plants and animals.

#### Particulates

Of or relating to minute separate particles.

#### Pesticides

Any substance or chemical applied to kill or control pests, including weeds, insects, algae, rodents and other undesirable agents.

#### Radioactivity

The spontaneous decay or disintegration of an unstable atomic nucleus, accompanied by the emission of radiation.

#### Radon

Radon is a radioactive gas that you can't see, taste, or smell. It is found throughout the U.S. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will, in most cases, be a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air

containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call your state radon program (800-838-5992) or call EPA's Radon Hotline (800-767-7236).

#### Surface water

All water naturally open to the atmosphere and all springs, wells or other collectors that are directly influenced by surface water. Water located close to the earth's surface.

#### Treatment technique (TT)

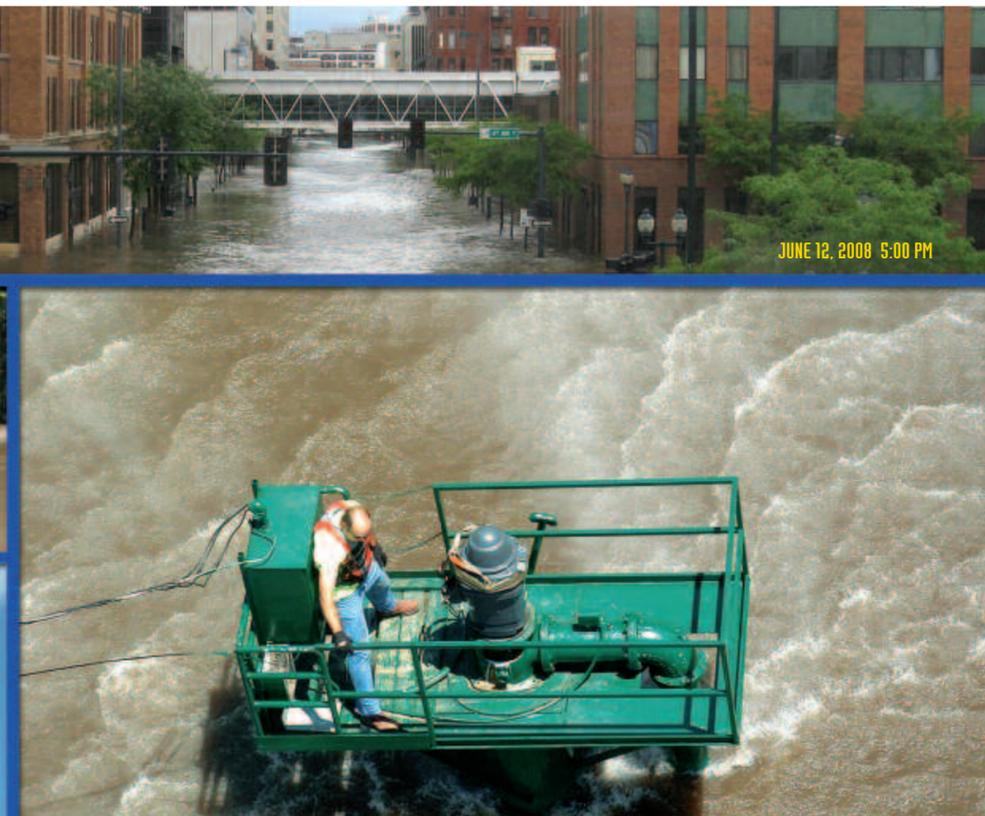
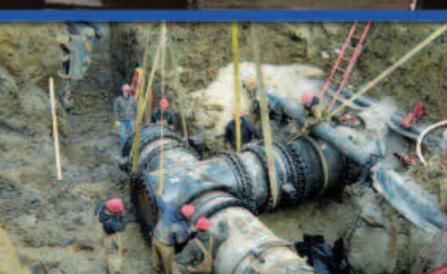
A required process intended to reduce the level of a contaminant in drinking water.

#### Turbidity

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

#### Violation

Exceeding the maximum contaminant level (MCL) of a contaminant regulated by the federal government; failure to properly monitor regulated contaminants would also be considered a violation.



Rising  
Above the  
Challenge  
2008

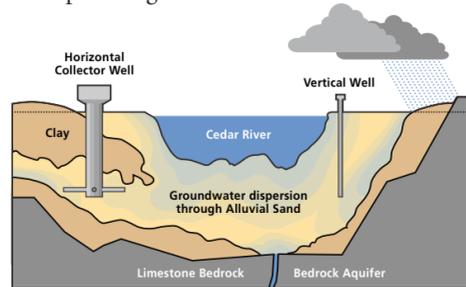


Water Quality  
REPORT

Serving the City of Cedar Rapids,  
the City of Robins, and the Glenbrook  
Cove Subdivision of Marion

# WHERE DOES OUR WATER COME FROM?

The City of Cedar Rapids obtains its drinking water supplies from shallow vertical and collector wells constructed in the sand and gravel deposits along the Cedar River. Those deposits form an underground water-bearing layer called an alluvial aquifer. Because of continuous pumping of the City's wells, most of the water in the aquifer is pulled from the river. The rest of the water is supplied as water percolates up from a deeper bedrock aquifer or down from the top of the ground.



Our drinking water from those wells benefits from natural filtration through the riverbank. This natural sand filtration has proven beneficial, pre-treating the water before it

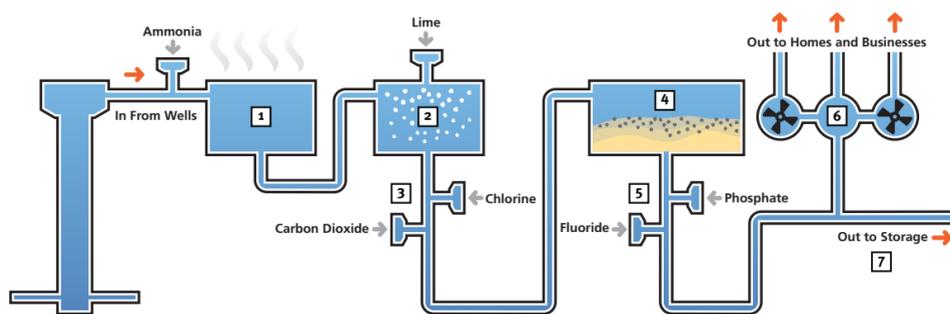
ever reaches the City's two treatment plants (both conventional lime-softening facilities).

In order to most effectively manage our water resources, the Cedar Rapids Water Department (CRWD) has worked with state and federal agencies to complete a source water assessment, identifying potential contamination sources in the Cedar River watershed. The results of that assessment, paired with a continuous monitoring program, help us better understand our watershed.

We have confirmed that some contaminants, including nitrate, herbicides and bacteria, enter the Cedar River watershed upstream from our wells. The watershed of the Cedar river upstream of Cedar Rapids is over 6,500 square miles and extends into southern Minnesota. This information is helpful when making decisions about current and future operational and water treatment needs.

Through these studies, we have confirmed the need for continued monitoring and for a strong watershed protection program. (If you are interested in reviewing our source water assessment or any monitoring results, please contact the CRWD at 319-286-5910.)

# HOW DO WE TREAT OUR WATER?



Cedar Rapids' water treatment process begins before the water ever enters our plants. We use a multi-barrier approach to protect our drinking water and ensure high quality. That takes the form of ongoing watershed and wellhead protection programs, water treatment processes and distribution system monitoring and flushing activities – right up to your tap.

## TREATMENT PROCESS HIGHLIGHTS

**1 Aeration.** Once water has been drawn from the wells into the City's treatment plants, it undergoes aeration. Raw or untreated water is allowed to cascade down a series of trays, increasing the surface area of the water and promoting the exchange of gases. Aeration also removes undesirable gases such as radon. Aeration is similar to the

natural process that occurs when a stream flows through rapids or over falls.

**2 Softening.** The CRWD adds slaked lime to the water. This softens or reduces the minerals that typically make water "hard." Excessive hardness increases soap use, deposits scale in water heaters and boilers, interferes with some industrial processes and sometimes gives water an unappealing taste and odor. Resulting lime residual materials are removed and applied to farmland as soil conditioner.

**3 Recarbonation & chlorination.** The CRWD lowers water pH by adding carbon dioxide and adds chlorine to disinfect the water. The chlorine helps ensure our water's microbiological safety by killing disease-causing organisms. The Department also adds a trace amount of ammonia to complete the disinfection process.

**4 Filtration.** Water is then passed through a sand and gravel filter bed, removing any remaining suspended matter.

**5 Fluoridation & phosphate addition.** After filtration, the CRWD adds fluoride to promote children's dental health. Phosphate is also added to chemically stabilize the water and lessen the possibility that lead will leach out of pipes and into tap water.

**6 Distribution.** From here, finished water is pumped directly into the three principal water distribution systems that serve homes and businesses throughout the City.

**7 Reserves.** Water not immediately consumed flows into storage tanks for use when demand exceeds plant pumpage. Water stored in elevated tanks helps stabilize pressure in the distribution system and serves as an emergency reserve for fire protection.

## EXPANDED MONITORING OF CONTAMINANTS

### Nitrate

A dissolved form of nitrogen found in fertilizers and sewage by-products that may leach into ground water and other water sources. Nitrates occur naturally in some waters. Over time, nitrates can accumulate in aquifers and contaminate ground water. Nitrate in drinking water at levels above 10 ppm is a health risk for infants less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, ask for advice from your health care provider.

### Lead

Our drinking water contains little or no lead when it leaves our treatment plant. However, lead can leach into the water during overnight contact with the lead solder and brass faucets in some homes. Because of that, the CRWD collects and analyzes special samples quarterly from area homes to more frequently monitor the distribution system.

Our tests show that most homes are at or well below the 15 parts per billion (ppb) – or 15 micrograms per liter of water – standard set by the Environmental Protection Agency (EPA) for annual compliance monitoring.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The CRWD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking and cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

The following state-approved laboratories can test your water for lead:

State Hygienic Laboratory	TestAmerica	Keystone Laboratory, Inc.
Oakdale, IA. 800-421-4692	Cedar Falls, IA. 319-277-2401	Newton, IA. 641-792-8451

Additional information is available from the Safe Drinking Water Hotline, 800-426-4791.

## QUESTIONS?

If you have questions or concerns about our water quality or this report, we invite you to attend one of two upcoming public meetings to be held at the Cedar Rapids Water Department, 1111 Shaver Road NE, Cedar Rapids, at 1:00 p.m. Wednesday, July 8th, and at 7:00 p.m. Thursday, July 9th.

You are also welcome to bring questions to any of the regular city council meetings, which are held at the AEGON Auditorium, 4333 Edgewood Road NE, west side entrance. These meetings are announced in the Cedar Rapids Gazette, and a schedule of future meetings can be viewed at [www.cedar-rapids.org](http://www.cedar-rapids.org).

For more information on this Water Quality Report or for copies of our monitoring reports (CRWD's or USGS), contact the Cedar Rapids Water Department at 319-286-5910.

## TURBIDITY

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

## AT-RISK POPULATIONS

It's important to be aware that some people may be more vulnerable than the general population to contaminants in drinking water.

This concern played a part in the boil water advisories issued by the city of Cedar Rapids this past year. These advisories were precautionary measures after water breaks created the potential for drops in water pressure. An advisory was requested by the Iowa Department of Natural Resources personnel asking residents in affected areas to boil their water as a precaution until the advisory was lifted.

In each instance, there was no indication that water quality was compromised, but the advisory ensured the public was protected until city officials could confirm that the water was bacterially safe.

Immuno-compromised persons — those undergoing cancer chemotherapy or organ transplants, the elderly, infants, or people with HIV/AIDS or other immune system disorders — can especially be at risk from infections.

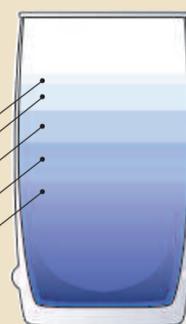
We ask anyone who is immuno-compromised to seek advice about drinking water from their health care providers. Guidelines from the EPA and Centers for Disease Control on appropriate steps to lessen the risk of infection by microbial contaminants are available from the national Safe Drinking Water Hotline at 800-426-4791.

## WATER VALUE

Cedar Rapids residents enjoy water rates that are among the lowest in the state.

### \$2.78 Buys You 1,000 Gallons of Clean Water

Engineering & Administrative Support	\$0.19
Water Source (Wells)	\$0.33
Meter & Customer Service	\$0.37
Distribution & Storage	\$0.68
Water Treatment	\$1.21



## WATER QUALITY FINDINGS

This table summarizes required water quality monitoring results for regulated parameters that were detected in the 2008 calendar year. The frequency of our monitoring far exceeds required testing. A comprehensive report of all water quality testing is available from the Water Department.

WATER TREATMENT PLANTS - FINISHED WATER										
Inorganic Chemicals		J Avenue Water Plant			NW Water Plant			Source of Contaminant		
Parameter	Units	MCL	MCLG	Max	Range	Average	Max	Range	Average	
Nitrate (as nitrogen)	mg/L	10	10	5.5	0.9-5.5	2.67	6.7	2-6.7	4.11	Run-off from fertilizer, leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (as nitrogen)	mg/L	1	1	0.02	ND-0.02	0.01	ND	ND	ND	Run-off from fertilizer, leaching from septic tanks, sewage; erosion of natural deposits
Fluoride	mg/L	4	4	1.2	0.11-1.2	0.77	1.26	0.18-1.26	0.99	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Sodium	mg/L	NA	NA	14	11-14	12.5	13	10-13	11.5	Erosion of natural deposits; added to water during treatment process
Sulfate	mg/L	NA	NA	29	26-29	27.5	32	25-32	28.5	Erosion of natural deposits
Common Herbicides										
Atrazine	ug/L	3	3	1.9	ND-1.9	0.31	1.1	ND-1.1	0.27	Runoff from fertilizer used on row crops
Radiological										
Radon*	pCi/L	NA	NA	114	81-114	99.8	73	16-73	52.5	Erosion of natural deposits
Combined Radium	pCi/L	NA	NA	ND	ND	ND	1.1	ND-1.1	0.55	Erosion of natural deposits

\*See Glossary for definition and additional information.

TREATMENT TECHNIQUE INDICATORS											
Turbidity		J Avenue Water Plant			NW Water Plant			Source of Contaminant			
Parameter	MCL Units	Max	Range	Average	Violation	Max	Range	Average	Violation		
Treatment Technique requires that turbidity not exceed 1.0 NTU	1.0	NTU	0.52	0.001-0.52	0.05	No	0.38	0.03-0.38	0.04	No	Soil run-off
Treatment Technique requires that no more than 5% of monthly samples exceed 0.3 NTU	5%	NTU	3.2	0-3.2	0.003		3.4	0-3.4	0.003		Soil run-off

Turbidity is an indicator of treatment filter performance and is regulated as a treatment technique.

Total Organic Carbon (TOC)										
Parameter	MCL Units	Max	Range	Average	Violation	Max	Range	Average	Violation	Source of Contaminant
Treatment Technique requires that the annual average of credits given for TOC removal be at least 1.	Credits for TOC removal	1.52	1.06-1.52	1.36	No	1.22	1.01-1.22	1.18	No	Naturally present in the environment

### Acronyms

ND: Not Detected	MRDL: Maximum Residual Disinfectant Level	NR: Not Regulated
mg/L: Milligrams per liter or parts per million	µg/L: Micrograms per liter or parts per billion	pCi/L: Pico-curies per liter
MCL: Maximum Contaminant Level	MCLG: Maximum Contaminant Level Goal	NA: Not Applicable
NTU: Nephelometric Turbidity Unit	MRDLG: Maximum Residual Disinfection Level Goal	Max: Highest Level Detected

DISTRIBUTION SYSTEM MONITORING										
Lead and Copper Rule	Units	Action Level (AL)	MCLG	Max	Range	90th/95th Percentile Violation	Samples Exceeding Action Level	Source of Contaminant		
Lead*	µg/L	1.5	0	26	ND-26	6/12	No	1	Corrosion of household plumbing systems	
Copper*	mg/l	1.3	1.3	0.11	ND-0.11	0.05/0.07	No	0		

\*Table reflects 2007 collection data. 2008 data not available because of flooding.

Total Coliform Rule	Units	MCL	MCLG	Max	Range	Avg.	Total #Samples Violation	Source of Contaminant	
Coliform Bacteria (% positive)	%	>5%	0	2%	0-2%	0.24%	1382	No	Naturally present in the environment

Disinfectant	MRDL	MRDLG	Max	Range	Avg.	Violation	Source of Contaminant
Total Chlorine Residual (based on a running 12-month average)	4	4	3.37	3.29-3.37	3.32	No	Water additive used to control microbial growth

Disinfection Byproducts	J Avenue Water Plant Service Area			NW Water Plant Service Area			Source of Contaminant		
Parameter	Units	MCL	MCLG	Max	Range	Avg. Violation	Max Range Avg. Violation		
Total Trihalomethanes (TTHM)	µg/L	80	NA	2.6	0-2.6	0.31	No	4.4 2.5-4.4 3.3	By-product of chlorinating drinking water
Total Haloacetic Acids (HAA5)	µg/L	60	NA	ND	ND	ND	No	7 ND-7 0.44	By-product of chlorinating drinking water

## Following is an important message from the Environmental Protection Agency:

Drinking water, including bottled water, may be reasonably expected to contain at least small amounts of some contaminants. That's because as the water we draw from — lakes, rivers, streams, ponds, reservoirs, springs, and wells — travels over the surface of the land or through the ground, it picks up naturally occurring minerals and, in some cases, radioactive material. It can also pick up substances resulting from the presence of animals or from human activity.

The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791 or visiting the Web site at [www.epa.gov/ogwdw](http://www.epa.gov/ogwdw).

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses and parasites, which can cause symptoms such as nausea, cramps, diarrhea and associated headaches.